

RAW SEQUENCE LISTING

**The Biotechnology Systems Branch of the Scientific and Technical
Information Center (STIC) no errors detected.**

Application Serial Number: 10/088594B
Source: FW10
Date Processed by STIC: 2/2/5

ENTERED



IFW16

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/088,594B

TIME: 16:07:46

Input Set : A:\5.1198 Sequence Listing.txt

Output Set: N:\CRF4\02022005\J088594B.raw

```

4 <110> APPLICANT: KYOWA HAKKO KOGYO CO., LTD
6 <120> TITLE OF INVENTION: Novel Transaldolase
8 <130> FILE REFERENCE: 00005.001198
10 <140> CURRENT APPLICATION NUMBER: US/10/088,594B
11 <141> CURRENT FILING DATE: 2002-03-21
13 <150> PRIOR APPLICATION NUMBER: JP 99/266548
14 <151> PRIOR FILING DATE: 1999-09-21
16 <160> NUMBER OF SEQ ID NOS: 6
18 <170> SOFTWARE: PatentIn Ver. 2.0
20 <210> SEQ ID NO: 1
21 <211> LENGTH: 1080
22 <212> TYPE: DNA
23 <213> ORGANISM: Corynebacterium glutamicum ATCC31388
25 <400> SEQUENCE: 1
27 atgtctcaca ttgatgatct tgcacagctc ggcacttcca cttggctcga cgacctctcc 60
29 cgcgagcgca ttacttccgg caatctcagc caggttattg aggaaaagtc tgtagtcggt 120
31 gtcaccacca acccagctat ttctgcagca gcaatgtcca agggcgattc ctacgacgct 180
33 cagatcgagc agctcaaggc cgctggcgca tctgttgacc aggctgttta cgccatgagc 240
35 atcgacgatg ttcgcaatgc ttgtgatctg ttcaccggca tcttcgagtc ctccaacggc 300
37 tacgacggcc gcgtgtccat cgaggttgac ccacgtatct ctgctgaccg cgacgcaacc 360
39 ctggctcagg ccaaggagct gtgggcaaag gttgatcgtc caaacgtcat gatcaagatc 420
41 cctgcaaccc caggttcttt gccagcaatc accgacgctt tggctgaggg catcagcggt 480
43 aacgtcacct tgatcttctc cgttgctcgc taccgcgagg tcatcgctgc gtacatcgag 540
45 ggaatcaagc aggcagctgc aaacggccac gacgtatcca agatccactc tgtggcttcc 600
47 ttcttcgtct cccgcgtcga cgttgagatc gacaagcgcc tcgaggcaat cggatccgat 660
49 gaggcttttg ctctgcgcgg caaggcaggc gttgccaacg ctcagcgcgc ttacgctgtg 720
51 tacaaggagc ttttcgagc cgccgagctg cctgaagggtg ccaacactca gcgccactg 780
53 tgggcatcca ccggcgtgaa gaacctgctg tacgctgcaa ctctttacgt ttccgagctg 840
55 gctgggtcaa acaccgtcaa caccatgcca gaaggcacca tcgacgctgt tctggaactg 900
57 ggcaacctgc acggtgacac cctgtccaac tccgcggcag aagctgacgc tgtgttctcc 960
59 cagcttgagg ctctgggcgt tgacttggca gatgtcttcc aggtcctgga gaccgaggg 1020
61 gtggacaagt ttgttgcttc ttggagcgaa ctgcttgagt ccatggaagc tcgcctgaag 1080
63 <210> SEQ ID NO: 2
64 <211> LENGTH: 1080
65 <212> TYPE: DNA
66 <213> ORGANISM: Corynebacterium glutamicum ATCC31388
68 <400> SEQUENCE: 2
70 atgtctcaca ttgatgatct tgcacagctc ggcacttcca cttggctcga cgacctctcc 60
72 cgcgagcgca ttacttccgg caatctcagc caggttattg aggaaaagtc tgtagtcggt 120
74 gtcaccacca acccagctat ttctgcagca gcaatgtcca agggcgattc ctacgacgct 180
76 cagatcgagc agctcaaggc cgctggcgca tctgttgacc aggctgttta cgccatgagc 240
78 atcgacgatg ttcgcaatgc ttgtgatctg ttcaccggca tcttcgagtc ctccaacggc 300
80 tacgacggcc gcgtgtccat cgaggttgac ccacgtatct ctgctgaccg cgacgcaacc 360

```

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/088,594B

TIME: 16:07:46

Input Set : A:\5.1198 Sequence Listing.txt

Output Set: N:\CRF4\02022005\J088594B.raw

```

82 ctggctcagg ccaaggagct gtgggcaaag gttgatcgtc caaacgtcat gatcaagatc 420
84 cctgcaaccc caggttcttt gccagcaatc accgacgctt tggctgaggg catcagcgtt 480
86 aacgtcacct tgatcttctc cgttgctcgc taccgcgagg tcatcgctgc gtacatcgag 540
88 ggaatcaagc aggcagctgc aaacggccac gacgtatcca agatccactc tgtggcttcc 600
90 ttcttcgtct cccgcgtcga cgttgagatc gacaagcgcc tcgaggcaat cggatccgat 660
92 gaggccttgg ctctgcgcgg caaggcaggc gttgccaacg ctacgcgcgc ttacgctgtg 720
94 tacaaggagc ttttcgacgc cgccgagctg cctgaagggtg ccaacactca gcgccactg 780
96 tgggcatcca ccggcgtgaa gaacctgctg tacgctgcaa ctctttacgt ttccgagctg 840
98 gctggtccaa acaccgtcaa caccatgcc aaggcacca tcgacgctgt tctggaactg 900
100 ggcaacctgc acggtgacac cctgtccaac tccgcggcag aagctgacgc tgtgttctcc 960
102 cagcttgagg ctctgggctg tgacttgga gatgtcttcc aggtcctgga gaccgaggg 1020
104 gtggacaagt ttgttgcttc ttggagcgaa ctgcttgagt ccatggaagc tcgcctgaag 1080
107 <210> SEQ ID NO: 3
108 <211> LENGTH: 4108
109 <212> TYPE: DNA
110 <213> ORGANISM: Corynebacterium glutamicum ATCC31388
112 <220> FEATURE:
113 <221> NAME/KEY: CDS
114 <222> LOCATION: (373)..(2472)
116 <220> FEATURE:
117 <221> NAME/KEY: CDS
118 <222> LOCATION: (2643)..(3722)
120 <400> SEQUENCE: 3
122 tcgagagttt gaaggggtcc gattcgttcc gttcgtgacg ctttgtgagg ttttttgacg 60
124 ttgcaccgta ttgcttgccg aacatttttc ttttcctttc ggtttttcga gaattttcac 120
126 ctacaaaagc ccacgtcaca gctcccagac ttaagattgg tcacaccttt gacacatttg 180
128 aaccacagtt gggtataaaa tgggttcaac atcactatgg ttagagggtg tgacgggtca 240
130 gattaagcaa agactacttt cggggtagat cacctttgcc aaatttgaat caattaacct 300
132 aagtcgtaga tctgatcatc ggatctaacg aaaacgaacc aaaactttgg tcccggttta 360
134 acccaggaag gaatgaccac cttgacgctg tcacctgaac ttcaggcgct cactgtacgc 420
136 aattaccctt ctgattggtc cgatgtggac accaaggctg tagacactgt tcgtgtcctc 480
138 gctgcagacg ctgtagaaaa ctgtggctcc ggccaccag gcaccgcaat gagcctggct 540
140 ccccttgcat acaccttgta ccagcgggtt atgaacgtag atccacagga caccaactgg 600
142 gcaggcctg accgcttcgt tctttcttgt ggccactcct ctttgaccca gtacatccag 660
144 ctttacttgg gtggattcgg ccttgagatg gatgacctga aggctctgcg cacctgggat 720
146 tccttgaccc caggacaccc tgagtaccgc cacaccaagg gcgttgagat caccactggc 780
148 cctcttgccc aggttcttgc atctgcagtt ggtatggcca tggctgctcg tcgtgagcgt 840
150 ggcctattcg acccaaccgc tgcgtagggc gaatcccat tcgaccacca catctacgtc 900
152 attgcttctg atggtgacct gcaggaagggt gtcacctctg aggcacctc catcgctggc 960
154 acccagcagc tgggcaacct catcgtgttc tgggatgaca accgcatctc catcgaagac 1020
156 aacactgaga tcgctttcaa cgaggacgtt gttgctcgtt acaaggctta cggctggcag 1080
158 accattgagg ttgaggctgg cgaggacgtt gcagcaatcg aagctgcagt ggctgaggct 1140
160 aagaaggaca ccaagcgacc taccttcac cgcgttcgca ccatcatcgg cttcccagct 1200
162 ccaaccatga tgaacaccgg tgctgtgcac ggtgctgctc ttggcgcagc tgaggttgca 1260
164 gcaaccaaga ctgagcttgg attcgatcct gaggctcact tcgcgatcga cgatgaggtt 1320
166 atcgtcaca cccgctccct cgcagagcgc gctgcacaga agaaggctgc atggcaggtc 1380
168 aagttcgatg agtgggcagc tgccaacctt gagaacaagg ctctgttcga tcgcctgaac 1440
170 tcccgtgagc ttccagcggg ctacgctgac gagctcccaa catgggatgc agatgagaag 1500
172 ggcgtcgcaa ctcgtaaggc ttccgaggct gcacttcagg cactgggcaa gacccttcct 1560

```

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/088,594B

TIME: 16:07:46

Input Set : A:\5.1198 Sequence Listing.txt

Output Set: N:\CRF4\02022005\J088594B.raw

```

174 gagctgtggg gcggttccgc tgacctcgca ggttccaaca acaccgtgat caagggctcc 1620
176 ctttccttcg gccctgagtc catctccacc gagacctggc ctgctgagcc ttacggccgt 1680
178 aacctgcaact tcggtatccg tgagcacgct atgggatcca tcctcaacgg catttccttc 1740
180 cacggtggca cccgcccata cggtggaacc ttctcatct tctccgacta catgcgtcct 1800
182 gcagttcgtc ttgcagctct catggagacc gagccttact acgtctggac ccacgactcc 1860
184 atcggctctgg gcgaagatgg cccaaccac cagcctgttg aaaccttggc tgcgctgcgc 1920
186 gccatcccag gtctgtccgt cctgcgtcct gcagatgcga atgagaccgc ccaggcttgg 1980
188 gctgcagcac ttgagtacaa ggaaggccct aagggtcttg cactgaccgc ccagaacgtt 2040
190 cctgttcttg aaggcaccaa ggagaaggct gctgaaggcg ttccgcgcgg tggctacgtc 2100
192 ctggttgagg gttccaagga aacccagat gtgatcctca tgggctccgg ctccgaggtt 2160
194 cagcttgca gttacgctgc gaaagctctg gaagctgagg gcgttgca gtcgcttgtt 2220
196 tcagttcctt gcatggattg gttccaggag caggacgcag agtacatcga gtccgttctg 2280
198 cctgcagctg tgaccgctcg tgtgtctgtt gaagctggca tcgcaatgcc ttggtaccgc 2340
200 ttcttgggca cccagggccg tctgtctccc cttgagcact tcggtgcttc tgcggattac 2400
202 cagaccctgt ttgagaagtt cggcatcacc accgatgcag tcgtggcagc ggccaaggac 2460
204 tccattaaca gttaattgcc ctgctgtttt tagcttcaac ccggggcagt atgattctcc 2520
206 ggaattttat tgccccgggt tgttgttgtt aatcggtaaa aagggtctta agcacatccc 2580
208 ttacttgctt gctctccttg agcacagttc aagaacaatt cttttaagga aaatttagtt 2640
210 tcatgtctca cattgatgat cttgcacagc tcggcacttc cacttggttc gacgacctct 2700
212 cccgcgagcg cttacttcc ggcaatctca gccaggttat tgaggaaaag tctgtagtcg 2760
214 gtgtcaccac caaccagct attttcgag cagcaatgtc caagggcgat tcctacgacg 2820
216 ctcatatcgc agagctcaag gccgctggcg catctgttga ccaggctgtt tacgccatga 2880
218 gcacgcagca tgttcgcaat gcttgtgatc tgttcacggc catcttcgag tccccaacag 2940
220 gctacgacgg ccgctgtctc atcgagttg acccacgtat ctctgctgac cgcgacgcaa 3000
222 ccctggctca ggccaaggag ctgtgggcaa aggttgatcg tccaaacgtc atgatcaaga 3060
224 tccctgcaac cccaggttct ttgccagcaa tcaccgacgc tttggctgag ggcatcagcg 3120
226 ttaacgtcac cttgatcttc tccgttgctc gctaccgca ggtcatcgct gcgtacatcg 3180
228 agggaaatcaa gcaggcagct gcaaacggcc acgacgtatc caagatccac tctgtggctt 3240
230 ctttcttcgt ctcccgctc gacgttgaga tcgacaagcg cctcgaggca atcgatccg 3300
232 atgaggcttt ggctctgcgc ggcaaggcag gcgttgccaa cgtcagcgc gcttacgctg 3360
234 tgtacaagga gcttttcgac gccgcgagc tgcctgaagg tgccaacact cagcgcacac 3420
236 tgtgggcatc caccggcgtg aagaaccctg cgtacgctgc aactctttac gtttccgagc 3480
238 tggctggtcc aaacaccgtc aacaccatgc cagaaggcac catcgacgct gttctggaac 3540
240 tgggcaacct gcacggtgac accctgtcca actccgcggc agaagctgac gctgtgttct 3600
242 cccagcttga ggctctgggc gttgacttgg cagatgtctt ccaggctctg gagaccgagg 3660
244 gtgtggacaa gtttgttgct tcttgagcg aactgcttga gtccatggaa gctcgcttga 3720
246 agtagaatca gcacgtgca tcagtaacgg cgacatgaaa tcgaattagt tcgatcttat 3780
248 gtggccgcta cacatctttc attaaagaaa ggatcgtgac gctaccatcg tgagcaciaa 3840
250 cagcaccccc tccagctgga caaacccact gcgcgacccg caggataaac gactcccccg 3900
252 catcgctggc ccttccggca tgggtgatct cggtgtcact ggcgacttgg ctggaaggaa 3960
254 gctgtccccc gccatttatg atctagcaaa ccgcggattg ctgccccag gattctcggt 4020
256 ggtaggttac ggccgcgcgc aatggtccaa agaagacttt gaaaaatacg tacgcgatgc 4080
258 cgcaagtgtc ggtgctcgta cggaattc 4108

```

261 <210> SEQ ID NO: 4

262 <211> LENGTH: 360

263 <212> TYPE: PRT

264 <213> ORGANISM: Corynebacterium glutamicum ATCC31388

266 <400> SEQUENCE: 4

268 Met Ser His Ile Asp Asp Leu Ala Gln Leu Gly Thr Ser Thr Trp Leu

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/088,594B

TIME: 16:07:46

Input Set : A:\5.1198 Sequence Listing.txt

Output Set: N:\CRF4\02022005\J088594B.raw

```

269      1              5              10              15
271 Asp Asp Leu Ser Arg Glu Arg Ile Thr Ser Gly Asn Leu Ser Gln Val
272              20              25              30
274 Ile Glu Glu Lys Ser Val Val Gly Val Thr Thr Asn Pro Ala Ile Phe
275              35              40              45
277 Ala Ala Ala Met Ser Lys Gly Asp Ser Tyr Asp Ala Gln Ile Ala Glu
278              50              55              60
280 Leu Lys Ala Ala Gly Ala Ser Val Asp Gln Ala Val Tyr Ala Met Ser
281      65              70              75              80
283 Ile Asp Asp Val Arg Asn Ala Cys Asp Leu Phe Thr Gly Ile Phe Glu
284              85              90              95
286 Ser Ser Asn Gly Tyr Asp Gly Arg Val Ser Ile Glu Val Asp Pro Arg
287              100             105             110
289 Ile Ser Ala Asp Arg Asp Ala Thr Leu Ala Gln Ala Lys Glu Leu Trp
290              115             120             125
292 Ala Lys Val Asp Arg Pro Asn Val Met Ile Lys Ile Pro Ala Thr Pro
293              130             135             140
295 Gly Ser Leu Pro Ala Ile Thr Asp Ala Leu Ala Glu Gly Ile Ser Val
296      145             150             155             160
298 Asn Val Thr Leu Ile Phe Ser Val Ala Arg Tyr Arg Glu Val Ile Ala
299              165             170             175
301 Ala Tyr Ile Glu Gly Ile Lys Gln Ala Ala Ala Asn Gly His Asp Val
302              180             185             190
304 Ser Lys Ile His Ser Val Ala Ser Phe Phe Val Ser Arg Val Asp Val
305              195             200             205
307 Glu Ile Asp Lys Arg Leu Glu Ala Ile Gly Ser Asp Glu Ala Leu Ala
308              210             215             220
310 Leu Arg Gly Lys Ala Gly Val Ala Asn Ala Gln Arg Ala Tyr Ala Val
311      225             230             235             240
313 Tyr Lys Glu Leu Phe Asp Ala Ala Glu Leu Pro Glu Gly Ala Asn Thr
314              245             250             255
316 Gln Arg Pro Leu Trp Ala Ser Thr Gly Val Lys Asn Pro Ala Tyr Ala
317              260             265             270
319 Ala Thr Leu Tyr Val Ser Glu Leu Ala Gly Pro Asn Thr Val Asn Thr
320              275             280             285
322 Met Pro Glu Gly Thr Ile Asp Ala Val Leu Glu Leu Gly Asn Leu His
323              290             295             300
325 Gly Asp Thr Leu Ser Asn Ser Ala Ala Glu Ala Asp Ala Val Phe Ser
326      305             310             315             320
328 Gln Leu Glu Ala Leu Gly Val Asp Leu Ala Asp Val Phe Gln Val Leu
329              325             330             335
331 Glu Thr Glu Gly Val Asp Lys Phe Val Ala Ser Trp Ser Glu Leu Leu
332              340             345             350
334 Glu Ser Met Glu Ala Arg Leu Lys
335              355             360
337 <210> SEQ ID NO: 5
338 <211> LENGTH: 700
339 <212> TYPE: PRT
340 <213> ORGANISM: Corynebacterium glutamicum ATCC31388

```

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/088,594B

TIME: 16:07:46

Input Set : A:\5.1198 Sequence Listing.txt

Output Set: N:\CRF4\02022005\J088594B.raw

342 <400> SEQUENCE: 5

```

344           Met Thr Thr Leu Thr Leu Ser Pro Glu Leu Gln Ala Leu
345           1           5           10
347 Thr Val Arg Asn Tyr Pro Ser Asp Trp Ser Asp Val Asp Thr Lys Ala
348           15           20           25
350 Val Asp Thr Val Arg Val Leu Ala Ala Asp Ala Val Glu Asn Cys Gly
351 30           35           40           45
353 Ser Gly His Pro Gly Thr Ala Met Ser Leu Ala Pro Leu Ala Tyr Thr
354           50           55           60
356 Leu Tyr Gln Arg Val Met Asn Val Asp Pro Gln Asp Thr Asn Trp Ala
357           65           70           75
359 Gly Arg Asp Arg Phe Val Leu Ser Cys Gly His Ser Ser Leu Thr Gln
360           80           85           90
362 Tyr Ile Gln Leu Tyr Leu Gly Gly Phe Gly Leu Glu Met Asp Asp Leu
363           95           100          105
365 Lys Ala Leu Arg Thr Trp Asp Ser Leu Thr Pro Gly His Pro Glu Tyr
366 110           115           120           125
368 Arg His Thr Lys Gly Val Glu Ile Thr Thr Gly Pro Leu Gly Gln Gly
369           130           135           140
371 Leu Ala Ser Ala Val Gly Met Ala Met Ala Ala Arg Arg Glu Arg Gly
372           145           150           155
374 Leu Phe Asp Pro Thr Ala Ala Glu Gly Glu Ser Pro Phe Asp His His
375           160           165           170
377 Ile Tyr Val Ile Ala Ser Asp Gly Asp Leu Gln Glu Gly Val Thr Ser
378           175           180           185
380 Glu Ala Ser Ser Ile Ala Gly Thr Gln Gln Leu Gly Asn Leu Ile Val
381 190           195           200           205
383 Phe Trp Asp Asp Asn Arg Ile Ser Ile Glu Asp Asn Thr Glu Ile Ala
384           210           215           220
386 Phe Asn Glu Asp Val Val Ala Arg Tyr Lys Ala Tyr Gly Trp Gln Thr
387           225           230           235
389 Ile Glu Val Glu Ala Gly Glu Asp Val Ala Ala Ile Glu Ala Ala Val
390           240           245           250
392 Ala Glu Ala Lys Lys Asp Thr Lys Arg Pro Thr Phe Ile Arg Val Arg
393           255           260           265
395 Thr Ile Ile Gly Phe Pro Ala Pro Thr Met Met Asn Thr Gly Ala Val
396 270           275           280           285
398 His Gly Ala Ala Leu Gly Ala Ala Glu Val Ala Ala Thr Lys Thr Glu
399           290           295           300
401 Leu Gly Phe Asp Pro Glu Ala His Phe Ala Ile Asp Asp Glu Val Ile
402           305           310           315
404 Ala His Thr Arg Ser Leu Ala Glu Arg Ala Ala Gln Lys Lys Ala Ala
405           320           325           330
407 Trp Gln Val Lys Phe Asp Glu Trp Ala Ala Ala Asn Pro Glu Asn Lys
408           335           340           345
410 Ala Leu Phe Asp Arg Leu Asn Ser Arg Glu Leu Pro Ala Gly Tyr Ala
411 350           355           360           365
413 Asp Glu Leu Pro Thr Trp Asp Ala Asp Glu Lys Gly Val Ala Thr Arg
414           370           375           380

```

VERIFICATION SUMMARY

DATE: 02/02/2005

PATENT APPLICATION: US/10/088,594B

TIME: 16:07:47

Input Set : A:\5.1198 Sequence Listing.txt

Output Set: N:\CRF4\02022005\J088594B.raw